CLAIMS

We claim:

1. An orthopedic prosthetic implant consisting essentially of a material selected from the group consisting of cobalt chrome alloy and austenitic stainless steel alloy, such that the implant comprises a core and surface layer, wherein the surface layer is hardened by the process of activating the surface by applying a layer of iron thereto, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

2. An orthopedic prosthetic implant consisting essentially of stainless steel alloy, such that the implant comprises a core and a surface layer, wherein the surface layer is hardened by the process of activating the surface by applying a layer of iron thereto, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

3. A prosthetic joint implant for a joint arthroplasty, wherein the joint comprises:

a first component, the first component comprising a surface having an articular portion thereon;

a second component, the second component comprising a surface having an articular portion thereon;

the first and second components being disposed relative to one another such that the articular surfaces of each component are movable against one another

at least one of the first and second component consisting essentially of a cobalt chrome alloy, wherein the surface layer of the at least one of the first and second component is hardened by the process of activating the surface by applying a layer of iron thereto, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

4. A prosthetic joint implant for a joint arthroplasty, wherein the joint comprises:

a first metal component consisting essentially of a cobalt chrome alloy, the first component comprising a surface having an articular portion thereon;

a second component consisting essentially of a cobalt chrome alloy, the second component comprising a surface having an articular portion thereon;

the first and second components being disposed relative to one another such that the articular surfaces of each component are movable against one another, wherein the surface layers of the first and second components are hardened by the process of activating the surface by applying a layer of iron thereto, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

5. The orthopedic implant component of claim 1, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

6. The orthopedic implant component of claim 2, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

7. The orthopedic implant component of claim 3, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

8. The orthopedic implant component of claim 4, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

9. An orthopedic prosthetic implant consisting essentially of a material selected from the group consisting of cobalt chrome alloy and austenitic stainless steel alloy, such that the implant comprises a core and surface layer, wherein the surface layer

is hardened by the process of activating the surface layer by exposing the surface layer to a gaseous hydrogen halide mixture, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

10. An orthopedic prosthetic implant consisting essentially of stainless steel alloy, such that the implant comprises a core and a surface layer, wherein the surface layer is hardened by the process of activating the surface layer by exposing the surface layer to a gaseous hydrogen halide mixture, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

11. A prosthetic joint implant for a joint arthroplasty, wherein the joint comprises:

a first component, the first component comprising a surface having an articular portion thereon;

a second component, the second component comprising a surface having an articular portion thereon;

the first and second components being disposed relative to one another such that the articular surfaces of each component are movable against one another;

at least one of the first and second component consisting essentially of a cobalt chrome alloy, wherein the surface layer of the at least one of the first and second component is hardened by the process of activating the surface layer by exposing the surface layer to a gaseous hydrogen halide mixture, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

12. A prosthetic joint implant for a joint arthroplasty, wherein the joint comprises:

a first metal component consisting essentially of a cobalt chrome alloy, the first component comprising a surface having an articular portion thereon;

a second component consisting essentially of a cobalt chrome alloy, the second component comprising a surface having an articular portion thereon;

the first and second components being disposed relative to one another such that the articular surfaces of each component are movable against one another, wherein the surface layers of the first and second components are hardened by the process of activating the surface layer by exposing the surface layer to a gaseous hydrogen halide mixture, and thereafter carburizing the surface at a temperature and for a time insufficient for carbides to form on the surface layer.

13. The orthopedic implant component of claim 9, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

14. The orthopedic implant component of claim 10, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

15. The orthopedic implant component of claim 11, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

16. The orthopedic implant component of claim 12, wherein the component is selected from the group consisting of an acetabular cup, a femoral head, a femoral stem, a glenoid cup, a humeral head, a humeral stem, a distal femoral condylar implant, and a proximal tibial implant.

17. The orthopedic implant component of claim 1, wherein the component is a fracture fixation plate.

18. The orthopedic implant component of claim 2, wherein the component is a fracture fixation plate.

19. The orthopedic implant component of claim 9, wherein the component is a fracture fixation plate.

20. The orthopedic implant component of claim10, wherein the component is a fracture fixation plate.